

PROBLEM GENERA CLOSE TO *MEGASELIA* (DIPTERA: PHORIDAE)

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In practice taxonomists construct both identification keys and classifications of species. Unfortunately there has been a tendency to confuse these two exercises. The results of such confusions are poorly constructed keys and unsound classifications. It is now generally agreed, however, that 'synapomorphy is the secret of sound classification whereas clear characterisation is the essence of a good key' (Disney, 1983*b*).

A character of great value in classification may be an impediment in identification. For example Dufour's crop mechanism in the females of some Phoridae is a major character in classification, allowing characterization of the Megaseliini (Disney, 1987, 1989), but it is not user-friendly in an identification key. Conversely the lack of wings in many female Phoridae is an excellent identification character (e.g. Disney, 1983*a*) but of little value in classification, because the loss of wings has clearly occurred many times independently during evolution. The presence of wings is plesiomorphic, and therefore this character state is of no value in classification.

The present classification of Phoridae is a prime example of the confusions highlighted above. Many of the classificatory divisions in the literature (e.g. Schmitz, 1929) can be traced back to couplets in Becker's (1901) identification keys, and keys derived from these (e.g. Lundbeck, 1922). The result is an essentially typological classification. If it were to be applied consistently, such that a good key was automatically a reflection of the classification, then there might be some advantage. However, contrary to their professions, typological taxonomists tend to ignore their own principles in practice. For example Borgmeier (1957) wrote 'I am convinced, with Blackwelder and Boyden, that the introduction of evolutionary concepts into systematics has produced great confusion. The systematist may not be anti-evolutionary, but in practice he is non-evolutionary'. Such statements summarized and made explicit his endorsement of typological classification. He then proceeded to add species to genera on implicitly non-typological grounds, so that the generic concepts themselves 'evolved' to the point where they can no longer be clearly characterized. For example he added *Veruanus verus* Borgmeier (1971) to the genus *Veruanus*, thereby radically changing the generic definition (see below). Such practice cannot be defended in terms of typological principles.

In a phylogenetic classification it is accepted that some members of a monophyletic genus may entirely lack characters both possessed by species closer to the ground plan and which are useful in identification. When constructing a key such inconveniences are got around by running different segregates within a genus to different couplets in a key to genera.

The present situation in the Phoridae is that we possess a typological classification, derived from early identification keys, which has become steadily more unwieldy as generic concepts have altered with the addition of ever more species which will not run out cleanly when taken through existing keys to genera. On top of this a new species has frequently been assigned to a new genus because of a morphological gap between it and an already existing genus. However, the discovery of further new species that bridge the gap has not always been followed by the suppression of the 'new' genus. Furthermore numerous genera have been described on the basis of one

sex only, and the subsequent discovery of the missing sex has frequently revealed no morphological gap between it and a related genus.

A measure of the current situation is provided by the following statistics. The most recent key to phorid genera of the world is that of Schmitz (1929). It deals with 90–100 genera, some of which have subsequently been synonymized with others. Today there are 234 genera recognized. Of these 54% are only known in one sex.

Undoubtedly the most confused area of Phorid taxonomy is the recognition of genera in the Metopininae, particularly with regard to those genera which resemble the enormous, and morphologically diverse, genus *Megaselia* Rondani. This paper aims to clarify the recognition of 'genera' in part of this complex for the Palaearctic fauna. The first priority is to facilitate recognition of genera, as presently understood. Only then will one be in a position to re-evaluate these genera. This work has been prompted by two new species which fail to key out unequivocally to a genus in Schmitz's (1941) keys to genera for the Palaearctic fauna, in his (1929) keys to world genera, or in the keys to Nearctic genera (Peterson, 1987, amended by Brown, 1988).

In Schmitz's (1941) keys both the new species run to the group of genera covered by his couplets 8–13 on page 83. To this section must be added *Anticofimbria* Schmitz (1951), which keys out at lead 2 of couplet 13. To couplet 10 lead 2 must be added *Trophithauma* Schmitz (Gotô, 1984), as well as the males of *Microselia* Schmitz (Disney, 1988). The latter also key out at lead 1 of couplet 13. Couplet 10 lead 2 needs further amendment by deletion of *Plastophora* Brues, which has been synonymized with *Megaselia* (Disney, 1986). The new species from Israel also keys out at couplet 10 lead 2, but does not readily fit into any of the six genera that also key out to this lead. The new species from Poland keys out at couplet 13 lead 2. It is clearly not a member of the genus *Anticofimbria*, assuming this is a valid genus. If, on the other hand, it is assigned to *Megaselia* then the concept of this genus becomes wide enough to embrace most of the other genera in this entire section.

In order to progress, the following provisional key is offered as a means of recognizing the genera as presently understood in the literature.

KEY TO PALAEARCTIC GENERA RESEMBLING MEGASELIA

- | | |
|---|-------------------------|
| 1. Males..... | 2 |
| — Females..... | 20 |
| 2. Hind tibia with an antero-dorsal row of bristle-like hairs as well as a postero-dorsal row (separated by the dorsal hair palisade) | 3 |
| — Hind tibia with no differentiated antero-dorsal bristle-like hairs | 4 |
| 3. Palp bristles only about size of upper occipitals. Proctiger with a pair of apical, finely-feathered bristles, which are clearly more robust than hairs on cerci..... | <i>Phalacrotophora</i> |
| — Palp bristles stronger, with at least one being clearly more robust than upper occipitals. Hairs at apex of proctiger little, if any, stronger than those on cerci..... | <i>Megaselia</i> (part) |
| 4. Third antennal segment drawn out into a long point, with a much shorter apical arista..... | <i>Tubicera</i> |
| — Third antennal segment rounded or oval, with a long arista | 5 |
| 5. Mesopleuron with hairs, and sometimes with one or more bristles as well | 6 |
| — Mesopleuron bare | 11 |
| 6. Vein 3 unforked..... | 7 |
| — Vein 3 forked | 8 |